

Can Low Vision Aids Improve the Quality of Life of Low Vision Patients?

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Abstract

Purpose: Considering the community-level of low vision, evaluation the rate of satisfaction of different Low Vision Aids (LVAs) and Quality Of Life (QOL), in Low Visions (LV) who use a kind of them, is very important.

Method: This is a cross-sectional study. This study evaluated the rate of satisfaction and QOL in the patients who presented to Cheshmak LV centre in Malayer since 21 June 2012 till 21 June 2015 and received a kind of LVA, with a reliable interviewing questionnaire. Statistical testing was carried out by using the SPSS-18. Two tailed paired t-test and independent t-test were used. Differences were considered significant at P value ≤ 0.05 .

Results: The results of the two tailed paired t-test used in comparison between the QOL before and after use of LVAs, indicated that all the general vision ($p=0.012$), average of quality of vision, quality of near activities, mental health, role difficulties, and dependency ($p<0.0005$) were increased significantly after use of these equipment. But quality of distance activities, social functioning, and ocular pain ($0.173 \leq p \leq 0.809$), did not change significantly. In general, the satisfaction of 91.7% of patient was more than 50%. The mean rate of satisfaction in males and females were not statistically significant ($p=0.27$). The rate of satisfaction and rate of influence of these devices on the patient's QOL did not dependent on the age or VA of the patients.

Conclusion: Using of LVAs improve the LVs' QOL in different aspects.

Keywords: Satisfaction; Low vision; Low-vision aids; Quality of life; VFQ-25

Introduction

Vision loss has been ranked third, behind arthritis and heart disease, among conditions that cause persons older than 70 years to need assistance in activities of daily living [1]. The number of people with visual impairment due to different causes is increasing. The number of persons with visual impairment due to DR worldwide is rising and represents an increasing proportion of all blindness causes [2]. In 2010, one in three blind people was blind due to cataract [3], and uncorrected refractive error continues as the leading cause of vision impairment and the second leading cause of blindness worldwide, affecting a total of 108 million people or 1 in 90 persons [4]. The prevalence of low vision (LV) is different from 0.3% in most developed countries in North America and Western Europe to 1.4% in developing countries in Africa [5,6]. In high-income countries, macular degeneration has become the most important cause of blindness [7]. WHO defines LV as a permanent visual impairment, in which visual acuity (VA) is between 20/70 to 20/200 or restricted visual field (VF) to 20 degrees in the better eye with the best possible correction [5,8] by standard eyeglasses, contact lenses, medicine or surgery, which interferes with the ability to perform everyday activities [1,9]. Quality of life (QOL) is an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns [6], therefore influenced not only by the nature and magnitude of impairment, but also by the impact this has on a person's ability to function within a chosen environment [6].

Visual impairment causes a high impact on self-perceived QOL and patient's preferences and demands of healthcare resources. People with LV can improve their QOL through vision rehabilitation services to use their remaining vision more effectively [9-11]. Rehabilitation services for these patients consist of: optical magnifiers, electrical magnifiers, microscope, and telescope. There are several instruments in the literature that have been used to determine in a direct or an indirect way to measure patient's QOL. Besides, QOL questionnaires have been suggested as the most appropriate way to measure the effectiveness of LV rehabilitation [11].

It has been well-established that LV is likely to get worse because the causes of LV are predominantly age related [10,12]. Therefore The prevalence of visual disabilities will increase markedly during the next decades in Iran, owing largely to the aging of the population. So, the rate of patients' satisfaction of rehabilitation services, and the effect of these services in promotion of their QOL must be very important for governmental centres to impact enough budget yearly for these patients to help them participate more effective in the society. The yearly budget impact of AMD was found to be between 51.3 and 101.1 million euros in France, Germany, Italy and the United Kingdom (UK) [13].

Significant improvements in overall QOL with LVAs, in people with LV has been addressed by several writers [1,14-22] although the magnitude and clinical significance of the rehabilitation-induced gains were modest. According to the literature, low vision rehabilitation improved visual field and visual quality of life of adult 6 month after use of low vision services [23]. Independently from the causal ophthalmologic diagnosis, patients were found to have benefited greatly from the rehabilitation services, enabling them to take part in

more activities and participate more fully in social life, thereby greatly improving their QOL [19]. There are several studies in the literature that indicated the impact of using LVAs on the QOL of LV patients, for example according to Shaaban et al. [23]. Despite the complaints about the appearance and use of LVAs, 76% of the Egyptian patients reported being moderately to highly-satisfied with their aids [23], in a same study conducted by Rohrschneider et al. [24] satisfaction of LVAs were more than 90% [25]. A questionnaire and telephone survey were carried out on a Scottish population of patients with impaired vision by McIlwaine et al. [26] in order to ascertain the proportion of patients who gain benefit from LVAs and to determine the number of LVAs which are retained but unused. One third of the patients who answered the questionnaire never use their LVAs, and one half were not satisfied with the service provided [26]. According to Diane et al. [27-29] study, the rate of satisfaction depended on the complexity of LVA, which means the more complex the LV services the lower rate of satisfaction. Nonvisual factors, such as physical and mental health, were found to be stronger predictors of QoL in people with LV than visual factors such as contrast sensitivity and visual acuity, or the use of magnifiers [11]. McIlwaine et al. [26] study demonstrated that satisfaction of LVAs decreases with decreasing VA and increasing age [26].

The aim of our study was to evaluate the rate of satisfaction and QOL in LV patients who use LVAs.

Methods

This was a cross-sectional study, which evaluated the rate of satisfaction and QOL in LV patients who were presented to Cheshmak LV clinic of Malayer since 21 June 2012 till 21 June 2015 and received a kind of LVA. We includes patients with VA of worse than 20/70 or restricted visual field to 20 degrees in the better eye with the best possible correction. Patients' personal information was reported from their documents in the Cheshmak's LV center archive. The patients whose information was not complete were excluded from the study. We completed validated Persian version of national eye institute visual function questionnaire (VFQ-25) for patients via telephone. It is a reliable interviewing telephonic questionnaire [28]. The same person interviewed all the patients.

VFQ-25 is a questionnaire with reliability of 0.72, which is specially designated for this purpose, and is the most universally used QOL instrument in the field of ophthalmology and visual science.4 This interviewing questionnaire consists of 25 questions to evaluate different aspects of life. The rate of satisfaction of prescribed LVA was asked subjectively.

We asked the questions in two states: before the use of LVAs and after the use of LVAs. The answers were evaluated with the answer sheet's scores. General vision, average of quality of vision, mental health, quality of near activities, role difficulties, dependency, quality of distance activities, social functioning and ocular pain were the aspects of life which were evaluated by this questionnaire before and after use of LVAs.

Of 212 patients who were presented to this clinic in this period of time, for 136 patients were prescribed a kind of LVA, of whom 88 patients were received the prescribed service. Finally 48 patients (24 man, 24 women) with mean age of 53.6 years old and VA of 0.08-0.2, were completed the questionnaire. Duration of use of LVAs in these patients differs from 3 to 15 months. The LVAs that had used in these patients consists of: microscope, telescope, optical magnifiers and electrical magnifiers.

All the patient's information was saved confidential; and before the interview, patients were completely informed of the study's aim.

Statistical testing was carried out by using the SPSS version 18. To compare differences before and after the use of LVAs, two tailed paired t-test and to compare independent variables independent t-test were used. Differences were considered significant at P value less than or equal to 0.05.

Results

In this study the satisfaction and QOL of LV patients who were presented to Cheshmak LV clinic of Malayer since 21 June 2012 till 21 June 2015 and received a kind of LVA, were analyzed via an interviewing (telephonic) questionnaire. The results indicate that using LVAs independently from the causal ophthalmologic diagnosis, improves LVs' QOL significantly in different aspects, although the magnitude and clinical significance of the rehabilitation-induced gains were modest.

	Paired Differences		p value
	Mean	Std. Deviation	
General health before use of LVA@ - general health after use of LVA	-18.75	21.65	0.012
General vision before use of LVA - general vision after use of LVA	-26.67	21.46	0.001
Ocular pain before use of LVA - ocular pain after use of LVA	-1.04	14.56	0.809
Near activities before use of LVA - near activities after use of LVA	-44.45	18.91	0
Distance activities before use of LVA - distance activities after use of LVA	-30.56	25.45	0.173
Social functioning before use of LVA - social functioning after use of LVA	6.25	15.54	0.191
Mental health before use of LVA - mental Health after use of LVA	-27.95	19.14	0
Role difficulties before use of LVA - role difficulties after use of LVA	-27.08	19.82	0.001
Dependency before use of LVA - dependency after use of LVA	-35.41	24.12	0
Average of the visual quality before use of LVA - average of the visual quality after use of LVA	-21.29	10.6	0

Table 1: Shows the changes in different aspects of quality of life in low vision patients who presented to Cheshmak's low vision clinic since 21 June 2012 till 21 June 2015.

Statistical analysis indicates that general health differences before and after use of LVA were statistically significant ($p=0.012$). The average of quality of general vision were changed from 39.23% to 60.52% ($p<0.0005$), the quality of near activities changed from 10.41% to 54.85% ($p<0.0005$), mental health differs from 26.73% to 54.68% ($p<0.0005$), role difficulties differs from 13.54% to 40.62% ($p<0.0005$), and dependency changed from 36.80% to 72.22% ($p<0.0005$) after use of L.V. as that are all statistically significant. But the quality of distance

activities ($p=0.173$) and ocular pain ($p=0.809$) did not change significantly before and after use of LVA. social functioning was

decreased from 63.54% to 57.29% after use of LVAs ($p=0.191$), that was not statistically significant (Table 1).

	Paired Differences		p value
	Mean	Std. Deviation	
General health before use of LVA@ - general health after use of LVA	-18.75	21.65	0.012
General vision before use of LVA - general vision after use of LVA	-26.67	21.46	0.001
Ocular pain before use of LVA - ocular pain after use of LVA	-1.04	14.56	0.809
Near activities before use of LVA - near activities after use of LVA	-44.45	18.91	0
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Social functioning before use of LVA - social functioning after use of LVA	6.25	15.54	0.191
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Role difficulties before use of LVA - role difficulties after use of LVA	-27.08	19.82	0.001
Dependency before use of LVA - dependency after use of LVA	-35.41	24.12	0
Average of the visual quality before use of LVA - average of the visual quality after use of LVA	-21.29	10.6	0
#Low Vision Aid			

Table 2: The rate of satisfaction distribution of low vision aids in low vision patients who presented to Cheshmak's low vision clinic since 21 June 2012 till 21 June 2015.

This means the high impact of these services in promotion of patient's QOL. The mean rate of satisfaction in males and females were 73.33% and 58.33% respectively, which the difference was not statistically significant ($p=0.27$).

Of patients for whom a kind of LVA were prescribed, 35.3% were not received the service. LVAs which used in 64.7% of patients who received the service, were 33.3% microscope, 25% keplerian telescope, 25% optical magnifier and 16.7% electrical magnifier. The mean of satisfaction of microscope, telescope, optical magnifiers and electrical magnifiers are shown in Table 3.

LVAs*	Satisfaction
Microscope	67%
Telescope	73%
Optical magnifier	56%
Electrical magnifier	65%
*Low Vision Aids	

Table 3: Mean satisfaction of different low vision aids.

Nonvisual factors, such as physical and mental health, were found to be stronger predictors of QOL in people with LV than visual factors such as contrast sensitivity and visual acuity.

The rate of satisfaction did not relate to the subjects' V.A. or age.

Discussion and Conclusion

The purpose of this study was to verify the rate of satisfaction and QOL in LV patients who presented to Cheshmak's LV clinic since 21

June 2012 till 21 June 2015 and use a kind of LVAs. The effect of visual rehabilitation services on promotion of LVs' QOL has been evaluated and confirmed in different studies (1,14-22). But in this study, we evaluated not only the patient visual satisfaction of LVAs, but also we verify the QOL in different aspects of the patient's life. Considering the community-level prevalence of LV, and increasing the rate of prevalence of LV in Iran during the next decades, owing to the aging of the population (LV causes are predominantly age-related), having the knowledge of the rate of satisfaction of rehabilitation services, which services a large population of the society, and the effect of these services in promotion of LV's QOL, indicates the importance of this study and prioritize it.

The questionnaire which we used in this study was a reliable, short questionnaire with 25 questions (VFQ-25), which its reliability was confirmed in former studies.

According to the results of the present study, visual rehabilitation services have an important effect on improving the patients' QOL and increase their dependency significantly, which was in agreement with the studies of Scott et al. [11], Bischoff et al. [14], Muneyasu [16], Ryan et al. [17], Nguyen et al. [18], Fröhlich et al. [19], Fernández Guardiola et al. [20]. This improvement is not only in their vision but also in most aspects of their life, including general vision, average of quality of vision, mental health, quality of near activities, role difficulties and dependency. As Lamoureux et al. concluded, although significant improvements in overall QOL of LVs occurred with using LVAs, the magnitude and clinical significance of the rehabilitation-induced gains were modest. Also our study was in agreement with Fröhlich et al. [19] that LV patients benefit greatly from the rehabilitation services, enabling them to take part in more activities and participate more fully in social life, independent from the causal ophthalmologic diagnosis. The data indicates that despite the complaints about the appearance and use of LVAs, 91.7% of the patients have the satisfaction of more

than 50%, as in Shaaban et al. [24] study which indicates 76% of the Egyptian patients were moderately to highly-satisfied with their aids, and in Rohrschneider et al. [25] study, the satisfaction of LVAs were more than 90%. As Hernandez Trillo et al. [11] concluded, our results indicates that nonvisual factors, such as physical and mental health, were found to be stronger predictors of QoL in people with LV than visual factors such as contrast sensitivity and VA.

In the present study, of patients for whom a kind of LVA were prescribed, 35.3% were not received the service, but the rate of satisfaction of those who received the service was from 10% to 100%, with the satisfaction of more than 50% in 91.7% of patients; these findings was in spite of those of McIlwaine et al. [26] which indicates that one third of the patients who answered the questionnaire never use their LVAs, and one half were not satisfied with the service provided. Our findings also do not support those of Diane et al. [27] which concluded that the rate of satisfaction depended on the complexity of LVA, which means the more complex the LV services the lower rate of satisfaction, what we conclude was that the rate of satisfaction of LVAs is dependent on patient's training, and the patients perception of their condition, rather the complexity of the LVAs (like Shuttleworth et al. [29] study in south Devon in 1995). As our results show that the rate of satisfaction of electrical magnifiers is more than optical magnifiers, however the complexity of the electrical magnifiers is more than the optical ones. One possible explanation for these two discrepancies is that in Diane et al. [27], studies, patients may do not received enough training for use of LVAs. Also our results are in disagreement with those of McIlwaine et al. [26], which demonstrated Satisfaction of LVAs decreases with decreasing VA and increasing age; our study indicates that the rate of satisfaction does not dependent on the age or VA of the patients.

One limitation we faced in this study was incomplete and imprecise documents, in which we complete the document if possible and otherwise, that documents were excluded.

At all, what is important is that all studies show that using LVAs improves the QOL of LV patients, and help them to participate more effectively in the society.

We recommend further studies using a larger sample which include all governmental and private LV clinics to gain more precise results.

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